ELECTRONIC and INFORMATION TECHNOLOGY ACCESSIBILITY STANDARDS

Subpart B – Technical Standards

§ 1194.21 Software applications and operating systems.

(a) STANDARD - When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.

AMSOS-IM guidance – If it works from a mouse it must work from a keyboard. All buttons that perform functions must be in tab order and be executable by keyboard action as well as mouse action. For functions like drag-and-drop, an alternative method, such as a button that moves the selected objects from one screen area to another, must be keyboard selectable.

(b) STANDARD - Applications shall not disrupt or disable activated features of other products that are identified as accessibility features, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.

AMSOS-IM guidance – Programmatically disabling any accessibility feature is prohibited.

(c) STANDARD - A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.

AMSOS-IM guidance – Do not tab to invisible objects. Display object names (such as input boxes) should not be the same. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(d) STANDARD - Sufficient information about a user interface element including the identity, operation and state of the element shall be available to assistive technology. When an image represents a program element, the information conveyed by the image must also be available in text.

AMSOS-IM guidance – Use descriptive titles for icons, buttons, data entry fields, check boxes, and other program elements. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(e) STANDARD - When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned to those images shall be consistent throughout an application's performance.

AMSOS-IM guidance – Consistency must be maintained throughout the application for all program elements. For example, an icon of a printer will mean “print” throughout the document.

(f) STANDARD - Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.

AMSOS-IM guidance – This provision does not restrict programmers from developing unique methods of displaying text on a screen. It requires that when those methods are used, the software also send the information through the operating systems functions for displaying text.

(g) STANDARD - Applications shall not override user selected contrast and color selections and other individual display attributes.

AMSOS-IM guidance – As stated.

(h) STANDARD - When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.

AMSOS-IM guidance – As stated. For example, always provide a “text only” mode of display as an alternate mode for all information.

(i) STANDARD - Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

AMSOS-IM guidance – As stated. For example, if the color “green” has a functional meaning then the word “GREEN” or the functional meaning of “green” must appear when the color appears. This applies to all colors that are expected to convey information.

(j) STANDARD - When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.

AMSOS-IM guidance – As stated. For example, see your windows properties appearance frames for an example of allowing multiple color selection schemes (high contrast 1, high contrast 1 – extra large type, high contrast 1 – large type, high contrast 2, etc.) if color selections other than the user’s window selected colors are used. Normally use the colors the user has already set as the windows colors.

(k) STANDARD - Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.

AMSOS-IM guidance – As stated

(l) STANDARD - When electronic forms are used, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

AMSOS-IM guidance – As stated. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

§ 1194.22 Web-based intranet and internet information and applications.

(a) A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content). (1.1)

AMSOS-IM guidance – An “alt text” field must describe all non-text objects (all pictures, icons, and sounds) for use by text only browsers. An image must have a text description accompanying it that explains the meaning of the image.

(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation. (1.4)

AMSOS-IM guidance – As stated. For example, If you can see it then you must have a “text only” presentation of the information. If you hear it you must have a “text display” of the information. Synchronize any sign language interpretation or real-time captioning or other presentation form. This applies to media that contributes to content – not media that is purely ornamental.

(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup. (2.1)

AMSOS-IM guidance – As stated. Design Web pages so that the foreground colors contrast with background colors. Information conveyed with color should also be conveyed by text. This applies to all colors that convey information. For example, if a user is to click on the red square to link to the referenced page, use the "alt" tag for the square image to say "Click here to link to the reference page”. If the color “green” has a functional meaning then the word “green” or the functional meaning of “green” must appear when the color appears.

(d) Documents shall be organized so they are readable without requiring an associated style sheet. (6.1)

AMSOS-IM guidance – As stated. For example, information on all pages must be usable by text only browsers. Text generated by style sheets is not part of the source document and will not be available to assistive technologies such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers. Organize the document so that that important content appears in the document itself and is not generated by a style sheet.

(e) Redundant text links shall be provided for each active region of a server-side image map. (1.2)

AMSOS-IM guidance – As stated.

(f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape. (9.1)

AMSOS-IM guidance – As stated.

(g) Row and column headers shall be identified for data tables. (5.1)

AMSOS-IM guidance – As stated.

(h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers. (5.2)

AMSOS-IM guidance – Every table that is more than two columns wide or more than two rows deep must display the column heading and row reference via “alt text” to allow easy skip through functionality while maintaining data reference integrity. For an example, click here.

(i) Frames shall be titled with text that facilitates frame identification and navigation. (12.1)

AMSOS-IM guidance – Because using frames gives the user a consistent portion of the screen, they are often used for navigational toolbars for web sites. They are also often faster because only a portion of the screen is updated, instead of the entire screen. Frames can be an asset to users of screen readers and other assistive technology if the labels on the frames are explicit. Labels such as top, bottom, or left, provide few clues as to what is contained in the frame. However, labels such as "navigation bar" or "main content" are more meaningful and facilitate frame identification and navigation. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz. (7.1)

AMSOS-IM guidance – As stated.

(k) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with

the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes. (11.4)

AMSOS-IM guidance – If, after your best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information and functionality, and is updated as often as the original page.

(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by ***assistive*** *technology.*

AMSOS-IM guidance – As stated. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).

AMSOS-IM guidance – As stated. For example, it is very common for a web page to provide links to needed plug-ins. The responsibility is on the web page author to know that a compliant application exists, before requiring a plug-in and make it available somewhere either within the document or via a link to a download area.

(n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

AMSOS-IM guidance – As stated. Help must be available on all data entry fields. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(o) A method shall be provided that permits users to skip repetitive navigation links.

AMSOS-IM guidance – As stated.

(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

AMSOS-IM guidance – As stated.

§ 1194.23 Telecommunications products.

(a) Telecommunications products or systems which provide a function allowing voice communication and which do not themselves provide a TTY functionality shall provide a standard non-acoustic connection point for TTYs. Microphones shall be capable of being turned on and off to allow the user to intermix speech with TTY use.

AMSOS-IM guidance – Individuals who use TTYs (a device that includes a keyboard and display that is used to transmit and receive text over a telephone line using sound) to communicate must have a non-acoustic way to connect TTYs to telephones in order to obtain clear TTY connections, such as through a direct RJ-11 connector, a 2.5 mm audio jack, or other direct connection. When a TTY is connected directly into the network, it must be possible for the acoustic pickup (microphone) to be turned off (automatically or manually) to avoid having background noise in a noisy environment mixed with the TTY signal. Since some TTY users make use of speech for outgoing communications, the microphone on/off capability must be automatic or easy to switch back and forth or a push-to-talk mode should be provided.

(b) Telecommunications products which include voice communication functionality shall support all commonly used cross-manufacturer non-proprietary standard TTY signal protocols.

AMSOS-IM guidance – As stated. (A TTY device includes a keyboard and display, which transmits and receives text over a telephone line using sound). Any product that compresses or alters the audio signal in such a manner that standard signals used by TTYs are not transmitted properly, preventing successful TTY communication, are prohibited.

(c) Voice mail, auto-attendant, and interactive voice response telecommunications systems shall be usable by TTY users with their TTYs.

AMSOS-IM guidance – This provision does not require that phone systems have voice to text conversion capabilities. It requires that TTY users can retrieve and leave TTY messages and utilize interactive systems.

(d) Voice mail, messaging, auto-attendant, and interactive voice response telecommunications systems that require a response from a user within a time interval, shall give an alert when the time interval is about to run out, and shall provide sufficient time for the user to indicate more time is required.

AMSOS-IM guidance – As stated.

(e) Where provided, caller identification and similar telecommunications functions shall also be available for users of TTYs, and for users who cannot see displays.

AMSOS-IM guidance – Since the end-users in a telecommunications relay service are not directly connected, passing along caller identification information is not commonly done; therefore, this reference does not apply to relay services to avoid confusion.

(f) For transmitted voice signals, telecommunications products shall provide a gain adjustable up to a minimum of 20 dB. For incremental volume control, at least one intermediate step of 12 dB of gain shall be provided.

AMSOS-IM guidance – If a volume adjustment is provided that allows a user to set the level anywhere from 0 to the upper requirement of 20 dB, there is no need to specify a lower limit.

(g) If the telecommunications product allows a user to adjust the receive volume, a function shall be provided to automatically reset the volume to the default level after every use.

AMSOS-IM guidance – This is a safety feature to protect people from suffering damage to their hearing if they accidentally answer a telephone with the amplification turned too high.

(h) Where a telecommunications product delivers output by an audio transducer which is normally held up to the ear, a means for effective magnetic wireless coupling to hearing technologies shall be provided.

AMSOS-IM guidance – For example, a telephone must generate a magnetic output so that the hearing aid equipped with a T-coil can accurately receive the message.

(i) Interference to hearing technologies (including hearing aids, cochlear implants, and assistive listening devices) shall be reduced to the lowest possible level that allows a user of hearing technologies to utilize the telecommunications product.

AMSOS-IM guidance – As stated.

(j) Products that transmit or conduct information or communication, shall pass through cross-manufacturer, non-proprietary, industry-standard codes, translation protocols, formats or other information necessary to provide the information or communication in a usable format. Technologies which use encoding, signal compression, format transformation, or similar techniques shall not remove information needed for access or shall restore it upon delivery.

AMSOS-IM guidance – For example, closed captioning information is usually included in portions of a video signal not seen by users without decoders. This section prohibits products from stripping out such information or requires the information to be restored at the end point.

(k) Products which have mechanically operated controls or keys, shall comply with the following:

AMSOS-IM guidance – It is the application of force to these controls that distinguishes them from touch-sensitive controls where the mere presence of a hand or finger is detected and reacted to by the product.

> *(1) Controls and keys shall be tactilely discernible without activating the controls or keys.*
>
> AMSOS-IM guidance – This can be accomplished by using various shapes, spacing, or tactile markings. For example, the standard desktop computer keyboard would meet this provision because the tactile mark on the "j" and "f" keys permits a user to locate all other keys tactilely. The geographic spacing of the function, "numpad" and cursor keys make them easy to locate by touch. In addition, most keyboards require some pressure before they transmit a keystroke. Conversely, "capacitance" keyboards that react as soon as they are

touched and have no raised marks or actual keys would not meet this provision. A "membrane" keypad with keys that must be pressed can be made tactilely discernible by separating keys with raised ridges so that individual keys can be distinguished by touch.

(2) Controls and keys shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls and keys shall be 5 lbs. (22.2 N) maximum.

AMSOS-IM guidance – For example, individuals with tremor, cerebral palsy, paralysis, arthritis, or artificial hands may have difficulty operating systems which require significant strength, fine motor control, assume a steady hand, or require the simultaneous use of two hands or fingers for operation.

(3) If key repeat is supported, the delay before repeat shall be adjustable to at least 2 seconds. Key repeat rate shall be adjustable to 2 seconds per character.

AMSOS-IM guidance – As stated.

(4) The status of all locking or toggle controls or keys shall be visually discernible, and discernible either through touch or sound.

AMSOS-IM guidance – For example, adding audio patterns such as ascending and descending pitch tones that indicate when a control is turned on or off would alleviate the problem of a person who is blind inadvertently pressing the locking or toggle controls. Also, buttons which remain depressed when activated or switches with distinct positions would meet this provision.

§ 1194.24 Video and multimedia products.

(a) All analog television displays 13 inches and larger, and computer equipment that includes analog television receiver or display circuitry, shall be equipped with caption decoder circuitry which appropriately receives, decodes, and displays closed captions from broadcast, cable, videotape, and DVD signals. As soon as practicable, but not later than July 1, 2002, widescreen digital television (DTV) displays measuring at least 7.8 inches vertically, DTV sets with conventional displays

measuring at least 13 inches vertically, and stand-alone DTV tuners, whether or not they are marketed with display screens, and computer equipment that includes DTV receiver or display circuitry, shall be equipped with caption decoder circuitry which appropriately receives, decodes, and displays closed captions from broadcast, cable, videotape, and DVD signals.

AMSOS-IM guidance – As stated.

(b) Television tuners, including tuner cards for use in computers, shall be equipped with secondary audio program playback circuitry.

AMSOS-IM guidance – The secondary audio channel is commonly used for audio description. Audio descriptions are important for persons who are blind or who have low vision because they provide a description of the visual content of a presentation synchronized with verbal information.

(c) All training and informational video and multimedia productions which support the agency's mission, regardless of format, that contain speech or other audio information necessary for the comprehension of the content, shall be open or closed captioned.

AMSOS-IM guidance – As stated.

(d) All training and informational video and multimedia productions which support the agency's mission, regardless of format, that contain visual information necessary for the comprehension of the content, shall be audio described.

AMSOS-IM guidance – As stated.

(e) Display or presentation of alternate text presentation or audio descriptions shall be user-selectable unless permanent.

AMSOS-IM guidance – As stated.

§ 1194.25 Self contained, closed products.

AMSOS-IM guidance – This group of requirements apply to those products that generally have embedded software and are commonly designed in such a fashion that a user cannot easily attach or install assistive technology. In some instances, a personal computer with a touch-screen will be enclosed in a display and

used as an "information kiosk. Self contained, closed products include, but are not limited to, information kiosks and information transaction machines, copiers, printers, calculators, fax machines, and other similar types of products. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(a) Self contained products shall be usable by people with disabilities without requiring an end-user to attach assistive technology to the product. Personal headsets for private listening are not assistive technology.

AMSOS-IM guidance – As stated.

(b) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

AMSOS-IM guidance – Users of assistive technology may need additional time to read and respond to menus and messages. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(c) Where a product utilizes touchscreens or contact-sensitive controls, an input method shall be provided that complies with §1194.23 (k) (1) through (4).

AMSOS-IM guidance – As stated.

(d) When biometric forms of user identification or control are used, an alternative form of identification or activation, which does not require the user to possess particular biological characteristics, shall also be provided.

AMSOS-IM guidance – Biometric controls refer to controls that are activated only if particular biological features (e.g., fingerprint, retina pattern, etc.) of the user match specific criteria.

(e) When products provide auditory output, the audio signal shall be provided at a standard signal level through an industry standard connector that will allow for private listening. The product must provide the ability to interrupt, pause, and restart the audio at anytime.

AMSOS-IM guidance – For example, individuals using personal headphones, amplifiers, audio couplers, and other audio processing devices need a place to plug these devices into the product in a standard fashion.

(f) When products deliver voice output in a public area, incremental volume control shall be provided with output amplification up to a level of at least 65 dB. Where the ambient noise level of the environment is above 45 dB, a volume gain of at least 20 dB above the ambient level shall be user selectable. A function shall be provided to automatically reset the volume to the default level after every use.

AMSOS-IM guidance – For example, audio output from a kiosk type product.

(g) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

AMSOS-IM guidance – For example, if the color “green” has a functional meaning then the word “GREEN” or the functional meaning of “green” must appear when the color appears. This applies to all colors that are expected to convey information.

(h) When a product permits a user to adjust color and contrast settings, a range of color selections capable of producing a variety of contrast levels shall be provided.

AMSOS-IM guidance – As stated. The disabling of adjustments is prohibited.

(i) Products shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

AMSOS-IM guidance – As stated. Avoid flashing or blinking objects – if the information is important then use a large font size and bold the font.

(j) Products which are freestanding, non-portable, and intended to be used in one location and which have operable controls shall comply with the following:

(1) The position of any operable control shall be determined with respect to a vertical plane, which is 48 inches in length, centered on the operable control, and at the

maximum protrusion of the product within the 48 inch length (see http://www.access-board.gov/sec508/figure1.htmfor drawing of this part).

(2) Where any operable control is 10 inches or less behind the reference plane, the height shall be 54 inches maximum and 15 inches minimum above the floor.

(3) Where any operable control is more than 10 inches and not more than 24 inches behind the reference plane, the height shall be 46 inches maximum and 15 inches minimum above the floor.

(4) Operable controls shall not be more than 24 inches behind the reference plane (see http://www.access-board.gov/sec508/figure2.htm for drawing of this part).

AMSOS-IM guidance – Provide provisions for the physical characteristics of large office equipment including reach ranges and the general physical accessibility of controls and features. Examples of these products include but are not limited to, copiers, information kiosks and floor standing printers.

§ 1194.26 Desktop and portable computers.

(a) All mechanically operated controls and keys shall comply with §1194.23 (k) (1) through (4).

AMSOS-IM guidance – This addresses keyboards and other mechanically operated controls.

(b) If a product utilizes touchscreens or touch-operated controls, an input method shall be provided that complies with §1194.23 (k) (1) through (4).

AMSOS-IM guidance – As stated.

(c) When biometric forms of user identification or control are used, an alternative form of identification or activation, which does not require the user to possess particular biological characteristics, shall also be provided.

AMSOS-IM guidance – Biometric controls refer to controls that are activated only if particular biological features (e.g., fingerprint, retina pattern, etc.) of the user match specific criteria.

(d) Where provided, at least one of each type of expansion slots, ports and connectors shall comply with publicly available industry standards.

AMSOS-IM guidance – This provision assures that the designers of assistive technology will have access to information concerning the design of system connections and thus be able to produce products that can utilize those connections. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

Subpart C -- Functional Performance Criteria

§ 1194.31 Functional performance criteria.

(a) At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

AMSOS-IM guidance – It is not expected that every software program will be self-voicing or have its own built-in screen reader. Software that complies with §1194.21 would also satisfy this provision.

(b) At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

AMSOS-IM guidance – Although visual acuity of 20/200 is considered "legally blind," there are actually millions of Americans with vision below the 20/200 threshold who can still see enough to operate and get output from technology, often with just a little additional boost in contrast or font size. This paragraph requires either the provision of screen enlargement and voice output or, that the product support assistive technology. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(c) At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

AMSOS-IM guidance – This provision is met when a product provides visual redundancy for any audible cues or audio output. If this redundancy cannot be built-into a product then the product shall support the use of assistive technology. Assistive technologies include software such as screen readers and speech synthesizers that operate in conjunction with graphical desktop browsers and hardware such as specialized one-handed keyboards and audio amplifiers.

(d) Where audio information is important for the use of a product, at least one mode of operation and information retrieval shall be provided in an enhanced auditory fashion, or support for assistive hearing devices shall be provided.

AMSOS-IM guidance – Examples of enhanced auditory fashion are by allowing for an increase in volume and/or altering the tonal quality or increasing the signal-to-noise ratio. Audio information that is important for the use of a product includes, but is not limited to, error tones, confirmation beeps and tones, and verbal instructions.

(e) At least one mode of operation and information retrieval that does not require user speech shall be provided, or support for assistive technology used by people with disabilities shall be provided.

AMSOS-IM guidance – If speech input is required to operate a product, this paragraph requires that at least one alternative input mode also be provided. For example, an interactive telephone menu that requires the user to say or press "one" would meet this provision.

(f) At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach and strength shall be provided.

AMSOS-IM guidance – As stated.

Subpart D -- Information, Documentation, and Support

§ 1194.41 Information, documentation, and support.

(a) Product support documentation provided to end-users shall be made available in alternate formats upon request, at no additional charge.

AMSOS-IM guidance – As stated.

(b) End-users shall have access to a description of the accessibility and compatibility features of products in alternate formats or alternate methods upon request, at no additional charge.

AMSOS-IM guidance – As stated.

(c) Support services for products shall accommodate the communication needs of end-users with disabilities.

AMSOS-IM guidance – As stated.

For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.

Identify table headers by using the TH (table header) element instead of the TD (table cell) element. Many authoring tools do this automatically when you tell it selected cells should be headers. A table marked up in this manner might look like (example taken from the WAI Techniques for Web Content Accessibility):

```
<TABLE border="border"
    summary="This table charts the number of cups of coffee consumed by
      each senator, the type of coffee (decaf or regular), and whether
      taken with sugar.">
  <CAPTION>Cups of coffee consumed by each senator</CAPTION>
  <TR>
    <TH id="t1">Name</TH>
    <TH id="t2">Cups</TH>
    <TH id="t3" abbr="Type">Type of Coffee</TH>
    <TH id="t4">Sugar?</TH>
  </TR>
  <TR>
    <TD headers="t1">T. Sexton</TD>
    <TD headers="t2">10</TD>
    <TD headers="t3">Espresso</TD>
    <TD headers="t4">No</TD>
  </TR>
  <TR>
    <TD headers="t1">J. Dinnen</TD>
    <TD headers="t2">5</TD>
    <TD headers="t3">Decaf</TD>
    <TD headers="t4">Yes</TD>
  </TR>
</TABLE>
```

This renders visually as:

Cups of coffee consumed by each senator

Name	Cups	Type of Coffee	Sugar?
T. Sexton	10	Espresso	No
J. Dinnen	5	Decaf	Yes

A speech synthesizer might render it by speaking the following:

```
Caption: Cups of coffee consumed by each senator

Summary: This table charts the number of cups of coffee
  consumed by each senator, the type of coffee (decaf or regular),
  and whether taken with sugar.

Name: T. Sexton,
Cups: 10,
Type: Espresso,
Sugar: No

Name: J. Dinnen,
```

```
Cups: 5,
Type: Decaf,
Sugar: Yes
```

It is important not to use the `TH` element to achieve formatting; use other means to do that. The semantic meaning of the `TH` element is important to many access aids.

Rationale:

Browsers and assistive technologies rely on structural markup to customize presentation to meet a user's needs. This is important to the computer's ability to speak the contents of a table using a speech synthesizer.

WAI checkpoint for this item:

WAI checkpoint (5.1)

This error message will be reported for any of the following browsers or HTML specifications:

1. HTML4.0